



November 2, 1998

IT-MC-CK05-0057
Project No. 774645

Mr. Ellis Pope
U.S. Army Corps of Engineers
Mobile District
Attn: EN-GH-P
109 Joseph Street
Mobile, Alabama 36628-0001

Contract: Contract No. DACA21-96-0018/CK005
Ft. McClellan, Alabama

Subject: Final Site-Specific Work Plans for Ft. McClellan

Dear Mr. Pope:

I am enclosing three copies of the final work plans as an addendum to Package 4 for your records. These plans incorporate the review comments we discussed and resolved during our BCT September meeting at Ft. McClellan, Alabama. This addendum to Package 4 describes the activities we will conduct at the Quartermasters Gasoline Storage Area (EBS Parcel 130) and the Former Fuel Yard (EBS Parcel 131). These two work plans were separated from the Former Motor Pool Area 600 based on comments from the regulators and the decision that the two sites be tracked separately.

I have distributed copies of this document according to the distribution list indicated below. If you have questions or need further information, please contact me at (303) 793-5250.

Sincerely,

Agnes Mayala for
Jeanne A. Yacoub, P.E.
Project Manager

Attachments

Ron Levy, Ft. McClellan (1 copy)
Chris Johnson, ADEM (2 copies)
Bobby Lewis, EPA Athens (1 copy)
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**Final
Site Investigations
Site-Specific Field Sampling Plan and
Site-Specific Safety and Health Plan Attachments
Former Quartermasters Gasoline Storage Area (Parcel 130)
Former Fuel Yard (Parcel 131)**

**Fort McClellan
Calhoun County, Alabama**

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

November 1998

Revision 1

Site-Specific Field Sampling Plans

Former Quartermasters Gasoline Storage Area (Parcel 130)

Former Fuel Yard (Parcel 131)

Final

**Site-Specific Field Sampling Plan Attachment
Site Investigation at the Former Quartermasters Gasoline
Storage Area, Parcel 130(7)
Fort McClellan
Calhoun County, Alabama**

Prepared for:

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**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

November 1998

Revision 1

Table of Contents

Page

List of Tables.....	iii
List of Figures	iii
List of Acronyms	iv
Executive Summary	ES-1
1.0 Project Description	1-1
1.1 Introduction.....	1-1
1.2 Site Description	1-1
1.3 Scope of Work	1-2
2.0 Summary of Existing Environmental Studies.....	2-1
3.0 Site-Specific Data Quality Objectives	3-1
3.1 Overview.....	3-1
3.2 Data Users and Available Data	3-1
3.3 Conceptual Site Exposure Model	3-2
3.4 Decision-Making Process, Data Uses, and Needs	3-3
3.4.1 Risk Evaluation.....	3-3
3.4.2 Data Types and Quality.....	3-3
3.4.3 Precision, Accuracy, and Completeness	3-4
4.0 Field Activities.....	4-1
4.1 Utility Clearances	4-1
4.2 Environmental Sampling	4-1
4.2.1 Surface Soil Sampling	4-1
4.2.1.1 Sample Locations and Rationale	4-1
4.2.1.2 Sample Collection	4-1
4.2.2 Subsurface Soil Sampling.....	4-2
4.2.2.1 Sample Locations and Rationale	4-2
4.2.2.2 Sample Collection	4-2
4.2.3 Direct-Push Groundwater Sampling.....	4-3
4.2.3.1 Sample Locations and Rationale.....	4-3
4.2.3.2 Sample Collection.....	4-3
4.3 Decontamination Requirements.....	4-3

Table of Contents *(Continued)*

	Page
4.4 Surveying of Sample Locations	4-4
4.5 Analytical Program	4-4
4.6 Sample Preservation, Packaging, and Shipping.....	4-5
4.7 Investigation-Derived Waste Management.....	4-5
4.8 Site-Specific Safety and Health	4-5
5.0 Project Schedule	5-1
6.0 References.....	6-1

List of Tables

Number	Title	Follows Page
3-1	Summary of Data Quality Objectives	3-1
4-1	Sample Locations and Rationale	4-1
4-2	Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities	4-1
4-3	Groundwater Sample Designations and QA/QC Sample Quantities	4-3
4-4	Analytical Samples	4-4

List of Figures

Number	Title	Follows Page
1-1	Site Location Map, Former Quartermasters Gasoline Storage Area, Parcel 130(7)	1-1
1-2	Site Map, Former Quartermasters Gasoline Storage Area, Parcel 130(7)	1-2
3-1	Human Health Conceptual Site Exposure Model	3-3
4-1	Proposed Sampling Locations, Former Quartermasters Gasoline Storage Area, Parcel 130(7)	4-1

List of Acronyms

ASP	ammunition supply point
bgs	below ground surface
CSEM	conceptual site exposure model
ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
IDW	investigation-derived waste
PID	photoionization detector
CESAS	Corps of Engineers South Atlantic Savannah
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Quartermasters Gasoline Storage Area, Parcel 130(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Quartermasters Gasoline Storage Area, Parcel 130(7).

The General Map of FTMC (Office of the Post Quartermaster, 1937) identifies the Quartermasters Gasoline Storage Area as being south of the ammunition supply point (ASP). This facility was located on the western side of the railroad tracks leading south from the ASP. Other information regarding this facility, dates of use, or operations is not available (Environmental Science and Engineering, Inc., 1998).

Specifically, IT will collect four surface soil samples, four subsurface soil samples, and two groundwater samples during these activities. IT will collect samples for analyses that include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Quartermasters Gasoline Storage Area, Parcel 130(7) will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat-specific ecological risk assessment work plan, and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Quartermasters Gasoline Storage Area, Parcel 130(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

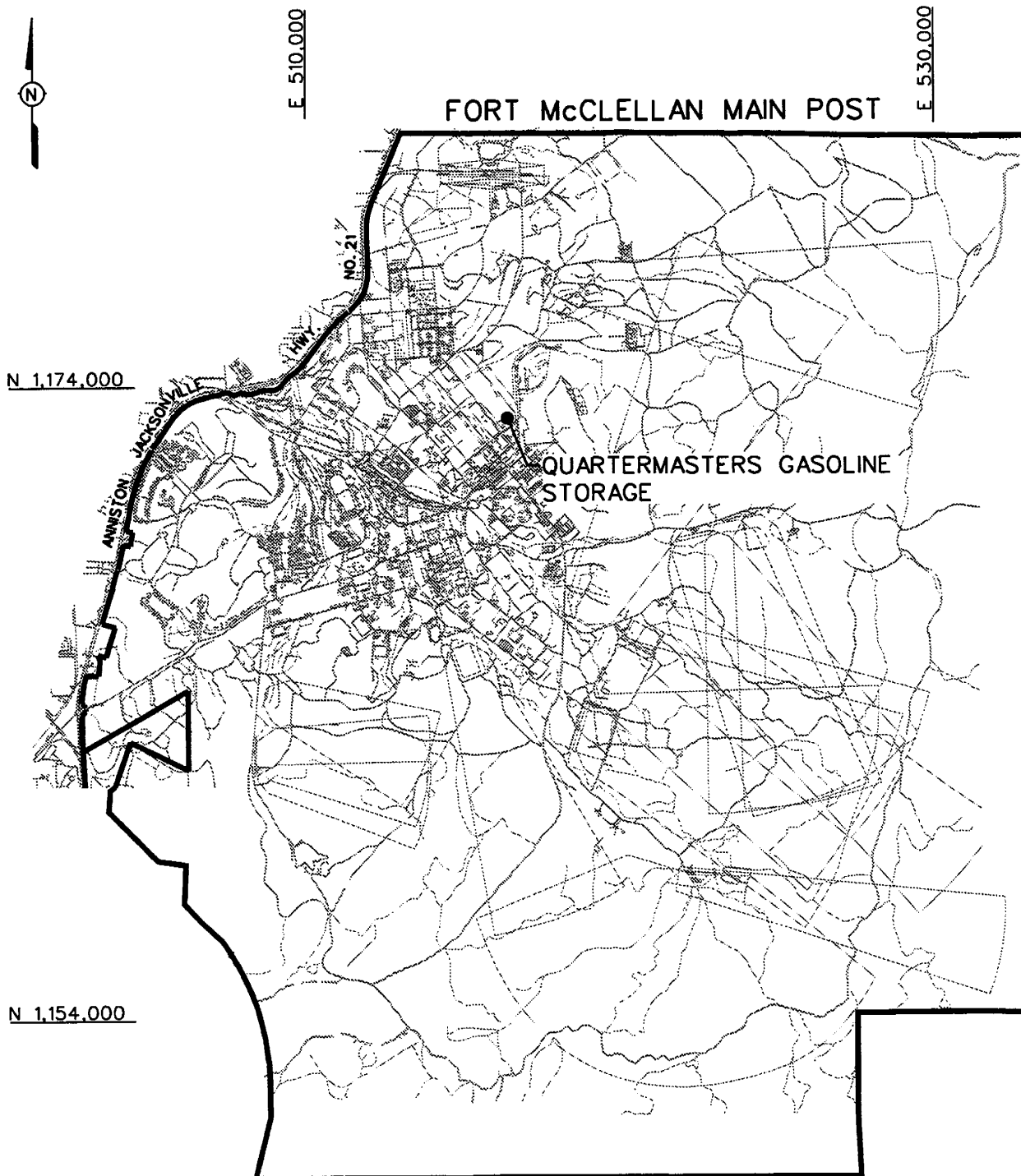
This site-specific field sampling and analysis plan attachment (SFSP) to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance and the rationale for sample collection and analysis at the Former Quartermasters Gasoline Storage Area, Parcel 130(7). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Quartermasters Gasoline Storage Area, Parcel 130(7), the habitat-specific screening ecological risk assessment work plan, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

The General Map of FTMC (Office of the Post Quartermaster, 1937) identifies the Quartermasters Gasoline Storage Area as being south of the ammunition supply point (ASP). This facility was located on the western side of the railroad tracks leading south from the ASP. Other information regarding this facility, dates of use, or operations is not available (Environmental Science and Engineering, Inc. [ESE], 1998).

The Former Quartermasters Gasoline Storage Area, Parcel 130(7) is located in the east-central portion of the Main Post, near the junction of 18th Street and Second Avenue (Figure 1-1). This site is reported to be adjacent to the western side of Second Avenue. Building 4434, a scale-house built in 1952, is located within this parcel. The scale-house (800 square feet) is at the southern end of the parcel, and is to be retained under the FTMC Reuse Plan Parcel 8 for industrial use (FTMC, 1997). Aerial photographs (U.S. Environmental Protection Agency [EPA], 1990) show this area to be a coal storage for the years 1949, 1954, and 1961. The parcel is approximately 350 by 75 feet (parallel to Second Avenue), at an elevation of 815 feet (Figure

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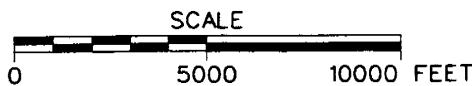
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FORT McCLELLAN BOUNDARY

FIGURE 1-1 SITE LOCATION MAP QUARtermasters GASOLINE STORAGE PARCEL 130(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



INTERNATIONAL
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1-2). Ground surface slope is to the west with no significant natural drainage features. The nearest natural drainage (an intermittent stream) is approximately 700 feet west, and flows to the northwest and eventually into Cave Creek.

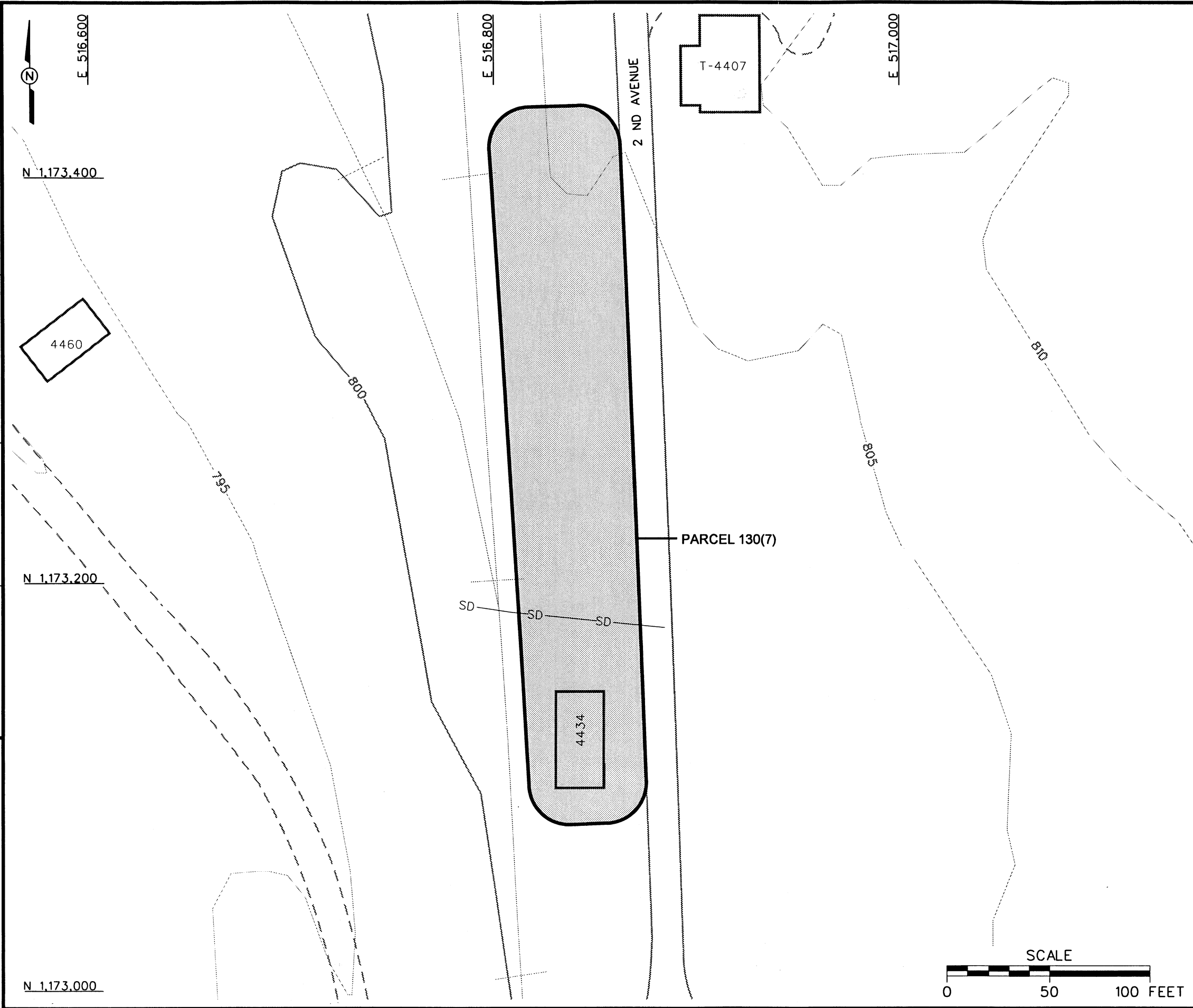
The Rarden Series soils cover the entire parcel. This series consists of moderately well drained, strongly acid to very strongly acid soils. These soils generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay silty clay mottled with a strong brown color. Concretions and fragments of sandstone, up to one-half inch in diameter, are commonly on and in the soil. The specific category of this soil for Parcel 130(7) is Rarden silty clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3). This type of Rarden soil has mild slopes, high erosion, and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0 to 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow, and capacity for available moisture is low. Depth to water is greater than 20 feet below ground surface (bgs), and depth to bedrock is approximately 1.5 to 4.0 feet bgs (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at Parcel 130(7), as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect four surface soil samples, four subsurface soil samples, and two ground-water samples to determine the presence or absence of contamination at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current EPA Region IV and Alabama Department of Environmental Management (ADEM) requirements.



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- RAILROAD
- SD STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
QUARTERMASTERS GASOLINE
STORAGE
PARCEL 130(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

SCALE
0 50 100 FEET

2.0 Summary of Existing Environmental Studies

An environmental baseline survey (EBS) was conducted by ESE (1998) to document current environmental conditions of all FTMC property. The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action under way.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed of all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. Previous studies to document site environmental conditions have not been conducted at Parcel 130(7).

The Former Quartermasters Gasoline Storage Area, Parcel 130(7) was classified as Category 7: Areas that are not evaluated or that require further evaluation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Quartermasters Gasoline Storage Area. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Quartermasters Gasoline Storage Area is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Quartermasters Gasoline Storage Area, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these SI activities and establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible information required to confirm or to rule out the existence of residual potential site-specific chemicals (PSSC) in site media.

Table 3-1

Summary of Data Quality Objectives
Former Quartermasters Gasoline Storage Area
Parcel 130(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD ITT Corporation Other Contractors Possible future land users	None Available	Contaminant Source Petroleum products <u>Migration Pathways</u> Infiltration to subsurface soil Dust emissions and volatilization from soil or groundwater to air Infiltration and leaching to groundwater <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future) PSSCs Fuel components, metals	Surface soil Subsurface soil Groundwater	SI to confirm whether PSSCs are present or absent in the site media. Definitive quality data for future decision making	Surface soil TCL VOCs, SVOCs TAL Metals Subsurface Soil TCL VOCs, SVOCs TAL Metals Groundwater TCL VOCs, SVOCs TAL Metals	Definitive data in CESAS Level B data packages Definitive data in CESAS Level B data packages Definitive data in CESAS Level B data packages	4 direct-push + QC 4 direct-push + QC 2 direct-push + QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PSSC - Potential site-specific chemical.
 QC - Quality control.
 SI - Site investigation.

SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target Compound list.
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in the risk assessment. The CSEM includes all receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates consistent and comprehensive evaluation of risk to human health through graphically presenting all possible exposure pathways, including all sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact scenarios with a contaminated source medium.

Parcel 130(7) is located in the east-central area of the main post near the intersection of 18th Street and Second Avenue. The area was formerly used for gasoline storage. Very little else is known about the site. It is possible that petroleum spills or leaks took place at this site, although there is no evidence that supports (or disputes) any of these possibilities. The contaminants of concern at this location are volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and metals.

Primary contaminant releases were probably limited to leaks and spills that initially entered surface or subsurface soil. Potential migration pathways at this site include: infiltration to subsurface soil; dust emissions and volatilization from soil or groundwater to air; and infiltration and leaching to groundwater.

The area is slated for industrial reuse, due to its proximity to existing and planned roads (FTMC, 1997). The following receptor scenarios are included in the CSEM:

- Future groundskeeper, because ground maintenance personnel could work the area in the future
- Future construction worker, because it is possible that demolition or building crews could work on future development projects at this site

- Future resident, as a conservative measure.

Current receptor scenarios were considered but excluded from the CSEM, because the site is not currently in use. The future recreational site user and venison and fish consumption scenarios are excluded, because there is no room for deer grazing, and no surface water to support fish habitat or fishing activities at this site. Figure 3-1 and Table 3-1 provide a summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Quartermasters Gasoline Storage Area. Data uses and needs are summarized in Table 3-1.

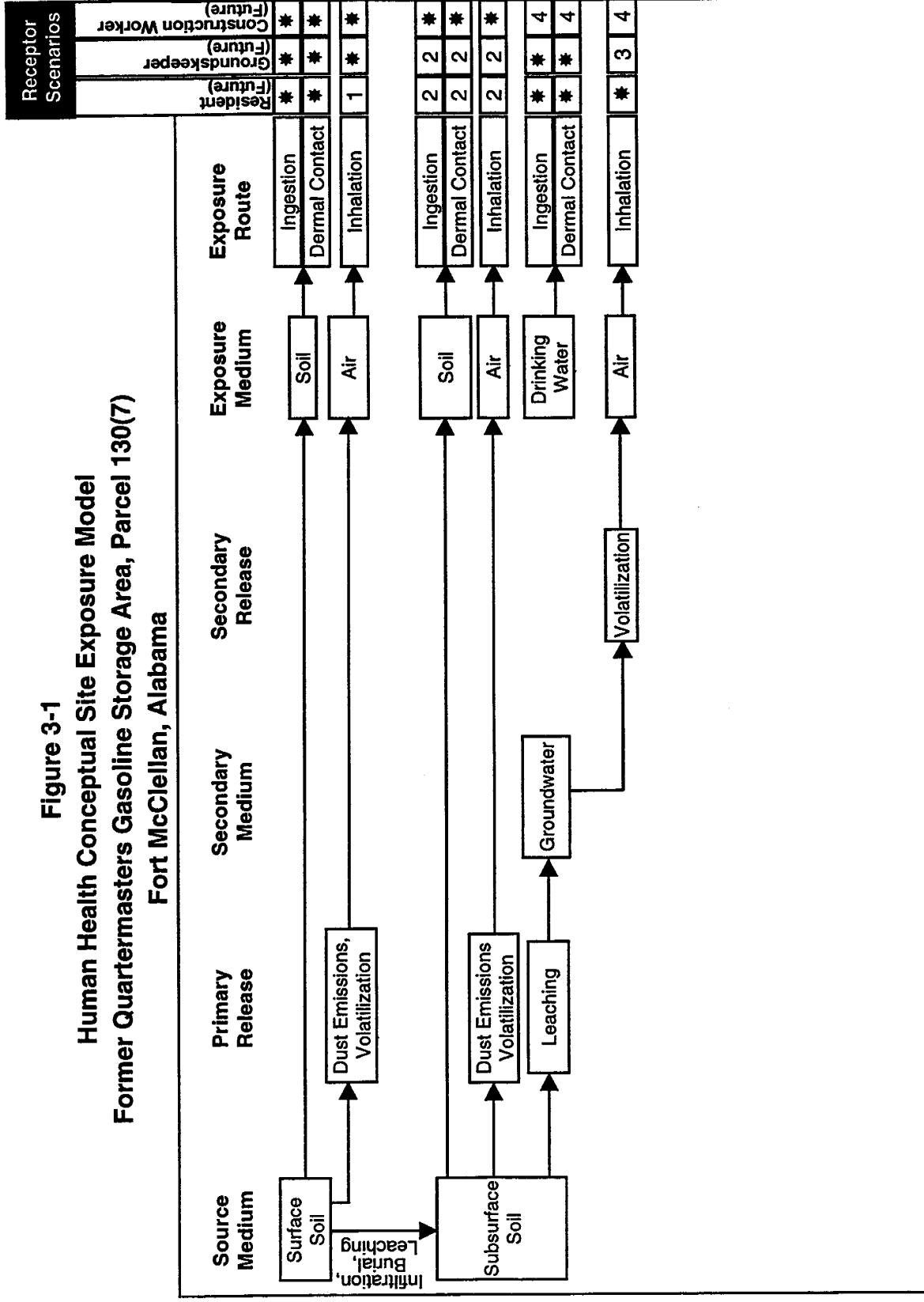
3.4.1 Risk Evaluation

Confirmation of the presence or absence of contamination at the Former Quartermasters Gasoline Storage Area will be based upon a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. This definitive data will confirm the presence or absence of site contamination areas and will support additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, and groundwater will be sampled and analyzed in order to meet the objectives of the SI at the Former Quartermasters Gasoline Storage Area. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
Former Quartermasters Gasoline Storage Area, Parcel 130(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; Inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for the SI investigation are provided in Section 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling performed during the SI at the Former Quartermasters Gasoline Storage Area will include the collection of surface soil, subsurface soil, and groundwater for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media sampled, location descriptions, and rationale are shown in Table 4-1.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from four soil borings at the Former Quartermasters Gasoline Storage Area.

4.2.1.1 Sample Locations and Rationale

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

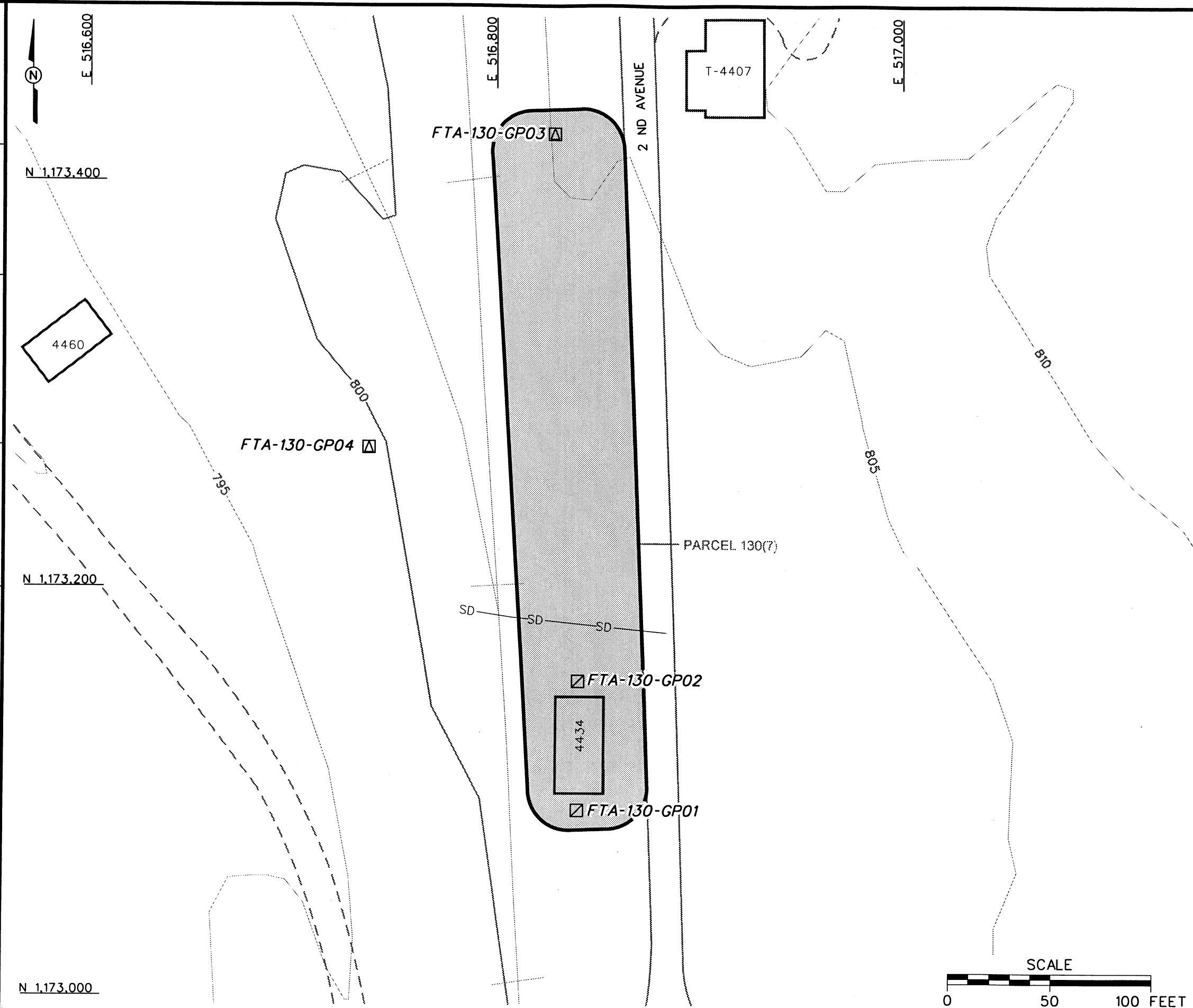
4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened for information only, not to select which samples will be submitted to the laboratory for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as

Table 4-1

**Sample Locations And Rationale
Former Quartermasters Gasoline Storage Area, Parcel 130(7)
Fort McEllan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
FTA-130-GP01	Surface soil and subsurface soil	Surface soil and subsurface soil will be collected the southern end of Building 4434 to determine if potential site-specific chemicals (PSSC) are present in site soils.
FTA-130-GP02	Surface soil and subsurface soil	Surface soil and subsurface soil will be collected at the northern end of Building 4434 to determine if PSSCs are present in site soils.
FTA-130-GP03	Surface soil, subsurface soil, and groundwater	Surface soil, subsurface soil, and groundwater will be collected at the northern end of the parcel to determine if PSSCs are present in site soils.
FTA-130-GP04	Surface soil, subsurface soil and groundwater	Surface soil, subsurface soil and groundwater will be collected approximately midway of the parcel western boundary (175 ft) and approximately 75 ft. due west for downgradient coverage to



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- RAILROAD
- SD — STORM DRAINAGE LINE
- ☐ PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
- ⬢ PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLING LOCATIONS
QUARTERMASTERS GASOLINE
STORAGE
PARCEL 130(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

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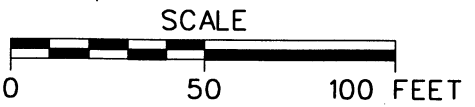


Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Quartermasters Gasoline Storage Area, Parcel 130(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-130-GP01	FTA-130-GP01-SS-DJ0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-130-GP01-DS-DJ0002-REG	a				
FTA-130-GP02	FTA-130-GP02-SS-DJ0003-REG	0-1	FTA-130-GP02-SS-DJ0004-FD	FTA-130-GP04-SS-DJ0005-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-130-GP02-DS-DJ0006-REG	a				
FTA-130-GP03	FTA-130-GP03-SS-DJ0007-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-130-GP03-DS-DJ0008-REG	a			FTA-130-GP03-DS-DJ0008-MS FTA-130-GP03-DS-DJ0008-MSD	
FTA-130-GP04	FTA-130-GP04-SS-DJ0009-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-130-GP04-DS-DJ0010-REG	a				

*Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

N/A - Not applicable.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from four soil borings at the Former Quartermasters Gasoline Storage Area.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the same soil borings as described in Section 4.2.1.1. Subsurface soil samples will be collected from the four soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated levels (above background) using the PID, the deepest sample collected shall be submitted for laboratory analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight for determining the existence of any PSSCs. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Direct-Push Groundwater Sampling

Two groundwater samples will be collected from direct-push temporary wells installed in soil boring at the site. A direct-push temporary well will be completed in two of the installed soil borings described in Section 4.2.2 to collect a groundwater sample.

4.2.3.1 Sample Locations and Rationale

Groundwater samples will be collected from direct-push temporary wells completed in two of the soil borings installed at the site. Groundwater samples will be collected from the direct-push temporary wells shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.3.2 Sample Collection

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.9.1.1 and 4.9.1.4 of the SAP. The direct-push temporary wells at each location will be completed at the water table surface (at a depth where sufficient water is encountered) in the soil borings to collect the groundwater samples.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Quartermasters Gasoline Storage Area, Parcel 130(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-130-GP03	FTA-130-GP03-GW-DJ3001-REG	water table*				TCL VOCs, TCL SVOCs, TAL Metals
FTA-130-GP04	FTA-130-GP04-GW-DJ3002-REG	water table*	FTA-130-GP04-GW-DJ3003-FD	FTA-130-GP04-GW-DJ3004-FS	FTA-130-GP04-GW-DJ3002-MS FTA-130-GP04-GW-DJ3002-MSD	TCL VOCs, TCL SVOCs, TAL Metals

* Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

N/A - Not applicable.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at the location specified in this chapter will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Quartermasters Gasoline Storage Area consist of the following analytical suite:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

Table 4-4

Analytical Samples
Former Quartermasters Gasoline Storage Area, Parcel 130(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples*					Quanterra		QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis	
Former Quartermasters Gasoline Storage Area: 2 groundwater samples, 4 surface soil, and 4 subsurface soil samples,														
TCL VOCs	8260B	water	normal	2	1	2	1	1	1	1	1	7	1	1
TCL SVOCs	8270C	water	normal	2	1	2	1	1	1	1	1	6	1	1
Tot TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1	1	1	6	1	1
TCL VOCs	8260B	soil	normal	8	1	8	1	1	1	1	1	12	1	1
TCL SVOCs	8270C	soil	normal	8	1	8	1	1	1	1	1	12	1	1
TAL Metals	6010B/7000	soil	normal	8	1	8	1	1	1	1	1	12	1	1
Former Quartermasters Gasoline Storage Area Subtotal:				30	6	6	6	6	6	1	6	55	6	6

*Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Attn: John Reynolds
 Tel: 423-588-8401
 Fax: 423-584-4315

USACE Laboratory split samples
 are shipped to:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30080-3112
 Tel: 770-919-5270

CA - Chemical Agent
 Cl - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.
 OP - Organophosphorus.

PCB - Polychlorinated biphenyls.
 Pest - Pesticides.

QA/QC - Quality assurance/quality control.
 SVOC - Semivolatile organic compound.

TAL - Target analyte list.
 TCL - Target compound list.
 VOC - Volatile organic compound.

The field sampling coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.1 and 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Telephone: (770) 919-5270

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Quartermasters Gasoline Storage Area will include decontamination fluids and possibly disposable personal protective equipment, and will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Health and safety requirements for this SI are provided in the SSHP attachment for the Former Quartermasters Gasoline Storage Area, Parcel 130(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science & Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Site Investigations at Fort McClellan, Alabama*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plan*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)*, Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.

Final

**Site-Specific Field Sampling Plan Attachment
Site Investigation at the Former Fuel Yard, Parcel 131(7)
Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

November 1998

Revision 1

Table of Contents

Page

List of Tables.....	iii
List of Figures	iii
List of Acronyms.....	iv
Executive Summary	ES-1
1.0 Project Description	1-1
1.1 Introduction.....	1-1
1.2 Site Description.....	1-1
1.3 Scope of Work	1-2
2.0 Summary of Existing Environmental Studies	2-1
3.0 Site-Specific Data Quality Objectives	3-1
3.1 Overview.....	3-1
3.2 Data Users and Available Data.....	3-1
3.3 Conceptual Site Exposure Model	3-2
3.4 Decision-Making Process, Data Uses, and Needs	3-3
3.4.1 Risk Evaluation.....	3-3
3.4.2 Data Types and Quality.....	3-3
3.4.3 Precision, Accuracy, and Completeness	3-4
4.0 Field Activities	4-1
4.1 Utility Clearances.....	4-1
4.2 Environmental Sampling	4-1
4.2.1 Surface Soil Sampling	4-1
4.2.1.1 Sample Locations and Rationale	4-1
4.2.1.2 Sample Collection	4-1
4.2.2 Subsurface Soil Sampling	4-2
4.2.2.1 Sample Locations and Rationale	4-2
4.2.2.2 Sample Collection	4-2
4.2.3 Direct-Push Groundwater Sampling	4-3
4.2.3.1 Sample Locations and Rationale	4-3
4.2.3.2 Sample Collection	4-3
4.3 Decontamination Requirements.....	4-3
4.4 Surveying of Sample Locations	4-3

Table of Contents (Continued)

	Page
4.5 Analytical Program	4-4
4.6 Sample Preservation, Packaging, and Shipping.....	4-5
4.7 Investigation-Derived Waste Management.....	4-5
4.8 Site-Specific Safety and Health	4-5
5.0 Project Schedule	5-1
6.0 References.....	6-1

List of Tables

Number	Title	Follows Page
3-1	Summary of Data Quality Objectives	3-1
4-1	Sample Locations and Rationale	4-1
4-2	Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities	4-1
4-3	Groundwater Sample Designations and QA/QC Sample Quantities	4-3
4-4	Analytical Samples	4-4

List of Figures

Number	Title	Follows Page
1-1	Site Location Map, Former Fuel Yard, Parcel 131(7)	1-1
1-2	Site Map, Former Fuel Yard, Parcel 131(7)	1-1
3-1	Human Health Conceptual Site Exposure Model for Former Fuel Yard, Parcel 131(7)	3-3
4-1	Proposed Sampling Locations, Former Fuel Yard, Parcel 131(7)	4-1

List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Fuel Yard, Parcel 131(7) to determine the presence or absence of potential site-specific chemicals. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Fuel Yard, Parcel 131(7).

The 1919 General Topographical and Location Map (Office of the Construction Quartermaster, 1919) identifies a former fuel yard at a location immediately south and west of the Quartermasters Gasoline Storage Area. The map presents the information poorly; therefore, the location plotted on environmental baseline survey maps is approximate and boundaries are unknown. Other information is not available (Environmental Science Engineering, Inc., 1998).

Specifically, IT will collect three surface soil samples, three subsurface soil samples, and one groundwater sample during these activities. IT will collect samples for analyses that include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Fuel Yard, Parcel 131(7), will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat-specific screening ecological risk assessment work plan, and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Fuel Yard, Parcel 131(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling and analysis plan attachment (SFSP) to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance and the rationale for sample collection and analysis at the Former Fuel Yard, Parcel 131(7). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Fuel Yard, Parcel 131(7), the habitat-specific screening ecological risk assessment work plan, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

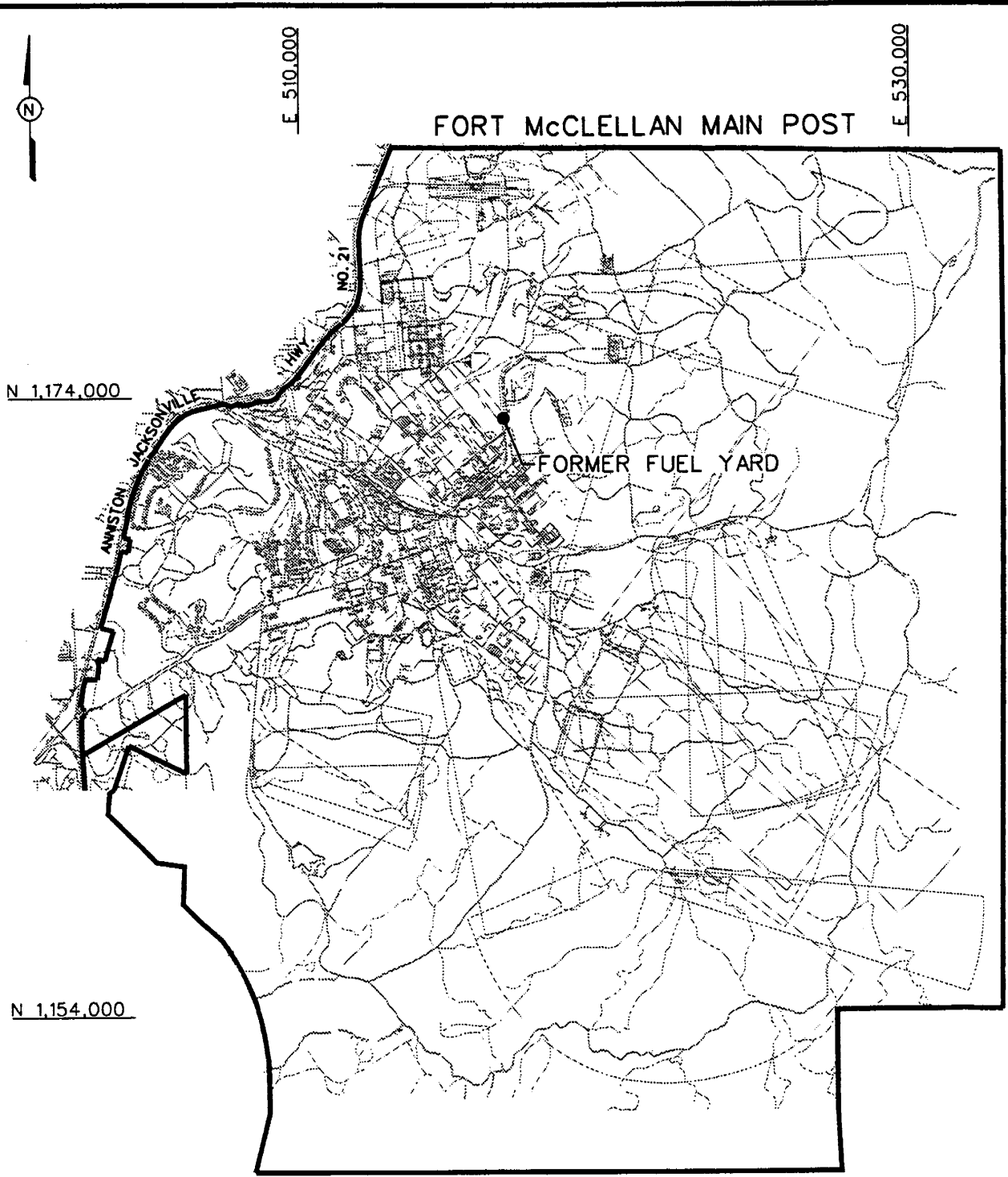
1.2 Site Description

The 1919 General Topographical and Location Map (Office of the Construction Quartermaster, 1919), identifies a former fuel yard at a location immediately south and west of the Quartermasters Gasoline Storage Area. The map presents the information poorly; therefore, the location plotted on environmental baseline survey (EBS) maps is approximate and boundaries are unknown. Other information is not available (Environmental Science Engineering, Inc. [ESE], 1998).


The Former Fuel Yard, Parcel 131(7) is located in the east central portion of the Main Post, near the junction of 18th Street and Second Avenue (Figure 1-1). This site is reported to be adjacent to 18th Street on the western side of an unimproved road that parallels Second Avenue. Aerial photographs (U.S. Environmental Protection Agency [EPA], 1990) show this area as what appears to be coal storage for the years 1949, 1954, and 1961. The exact parcel size is unknown and is represented on the EBS map by a shaded circle at an approximate elevation of 790 feet (Figure 1-2). Ground surface slope is to the west with no significant natural drainage features. The nearest natural drainage (an intermittent stream) is approximately 500 feet to the west, and flows to the northwest and eventually into Cave Creek.

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LEGEND:

 FORT McCLELLAN BOUNDARY

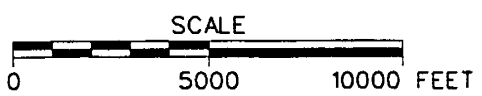
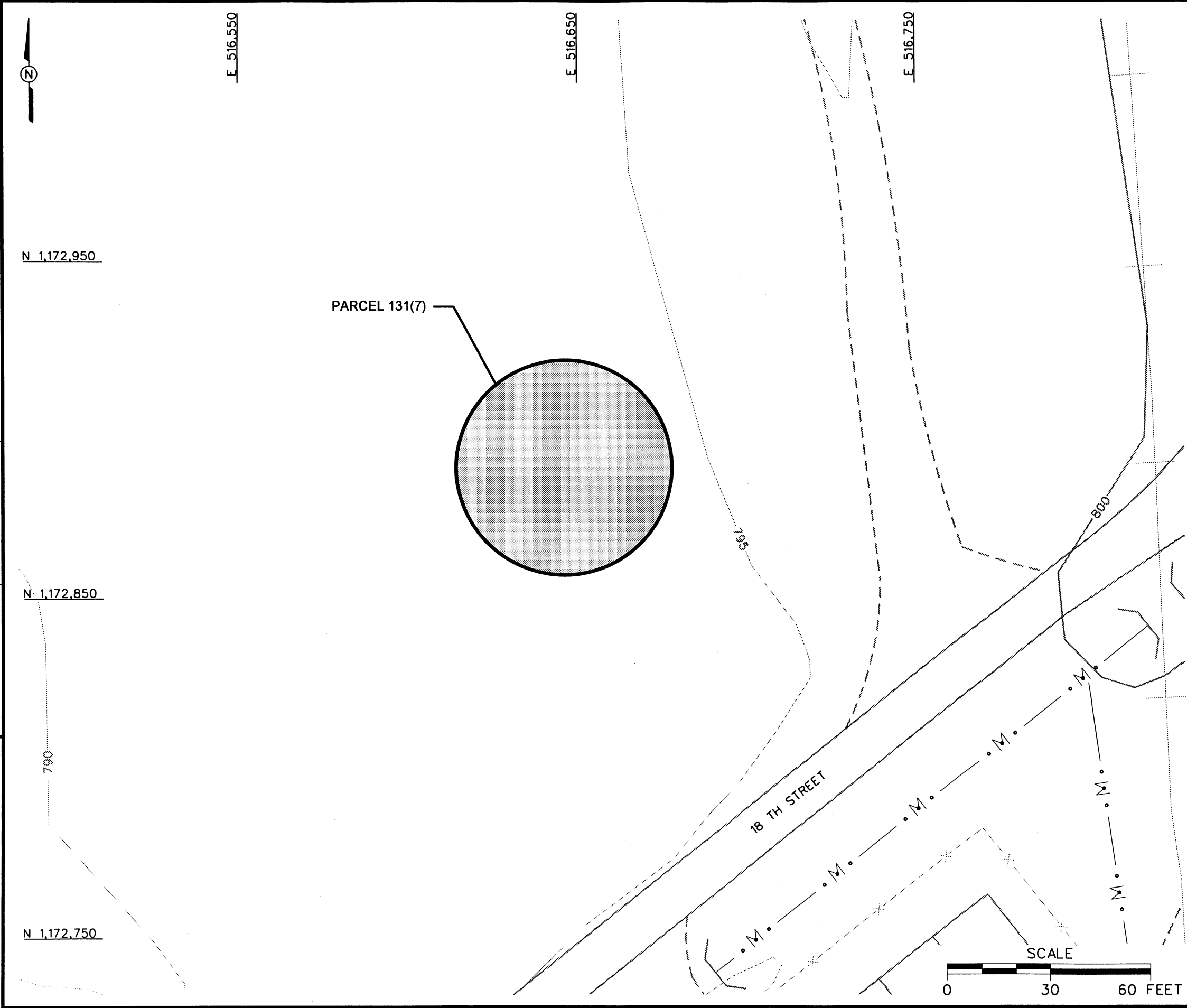


FIGURE 1-1
SITE LOCATION MAP
FORMER FUEL YARD
PARCEL 131(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018





- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - RAILROAD

FIGURE 1-2
SITE MAP
FORMER FUEL YARD
PARCEL 131(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



The Rarden Series soils cover the entire parcel. This series consists of moderately well drained, strongly acid to very strongly acid soils. These soils generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with a strong brown color. Concretions and fragments of sandstone, up to one-half inch in diameter are commonly on and in the soil. The specific category of this soil for Parcel 131(7) is Rarden silty clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3). This type of Rarden soil has mild slopes, high erosion and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0 to 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow, and capacity for available moisture is low. Depth to water is greater than 20 feet below ground surface (bgs), and depth to bedrock is approximately 1.5 to 4.0 feet bgs (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at Parcel 131(7) as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect three surface soil samples, three subsurface soil samples, and one ground-water sample to determine the presence or absence of contamination at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current EPA Region IV, and the Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

An EBS was conducted by ESE (1998) to document current environmental conditions of all FTMC property. The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action under way.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed of all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. Previous studies to document site environmental conditions have not been conducted at Parcel 131(7).

The Former Fuel Yard, Parcel 131(7) was classified as Category 7: Areas that are not evaluated or that require further evaluation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Fuel Yard, Parcel 131(7). This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Fuel Yard, Parcel 131(7) is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Fuel Yard, Parcel 131(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these SI activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible information required to confirm or to rule out the existence of residual potential site-specific chemicals (PSSC) in the site media.

Table 3-1

**Summary of Data Quality Objectives
Former Fuel Yard**

**Parcel 131(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None Available	Contaminant Source Petroleum products	Surface soil	SI to confirm whether PSSCs are present or absent in the site media.	Surface soil TCL VOCs, SVOCs TAL Metals	Definitive data in CESAS Level B data packages	3 direct-push + QC
		Migration Pathways Infiltration and leaching to subsurface soil Dust emissions and volatilization from soil or groundwater to air Infiltration and leaching to groundwater	Subsurface soil Groundwater	Definitive quality data for future decision making	Subsurface Soil TCL VOCs, SVOCs TAL Metals	Definitive data in CESAS Level B data packages	3 direct-push + QC
		Potential Receptors Groundskeeper (current and future) Construction worker (future) Resident (future) PSSCs Fuel components, metals			Groundwater TCL VOCs, SVOCs TAL Metals	Definitive data in CESAS Level B data packages	1 direct-push + QC

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
PSSC - Potential site-specific chemical.
QC - Quality control.
SI - Site investigation.

SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target Compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Parcel 131(7) is located in the east-central area of the Main Post near the intersection of 18th Street and Second Avenue, adjacent to Parcel 130(7). Very little is known about this area. The most plausible environmental concerns at this location are from former petroleum spills or leaks. The site is no longer in service. Sampling and analyses will include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and metals to ensure plausible contamination possibilities are investigated.

Primary contaminant releases were probably limited to leaks and spills that initially entered surface soil. The only significant potential contaminant transport pathways are infiltration and leaching to subsurface soil, dust emissions, and volatilization into ambient air. Contamination leaching into groundwater is also considered. The surface water pathway is excluded, because infiltration is the only substantive pathway for surface water dissipation at this location, which lacks definitive surface water drainage.

The area is slated for industrial reuse, due to its proximity to existing and planned roads (FTMC, 1997). The following receptor scenarios are included in the CSEM:

- Future groundskeeper, because ground maintenance personnel could work the area in the future

- Future construction worker, because it is possible that demolition or building crews could work on future development projects at this site
- Future resident, as a conservative measure.

Current receptor scenarios are considered but excluded from the CSEM, because the site is not used for any purpose at the present time. In addition, the future recreational site user and venison and fish consumption scenarios are excluded, because there is no room for deer grazing and no surface water to support fish habitat or fishing activities at this site. Figure 3-1 and Table 3-1 provide a summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Former Fuel Yard. Data uses and needs are summarized in Table 3-1.

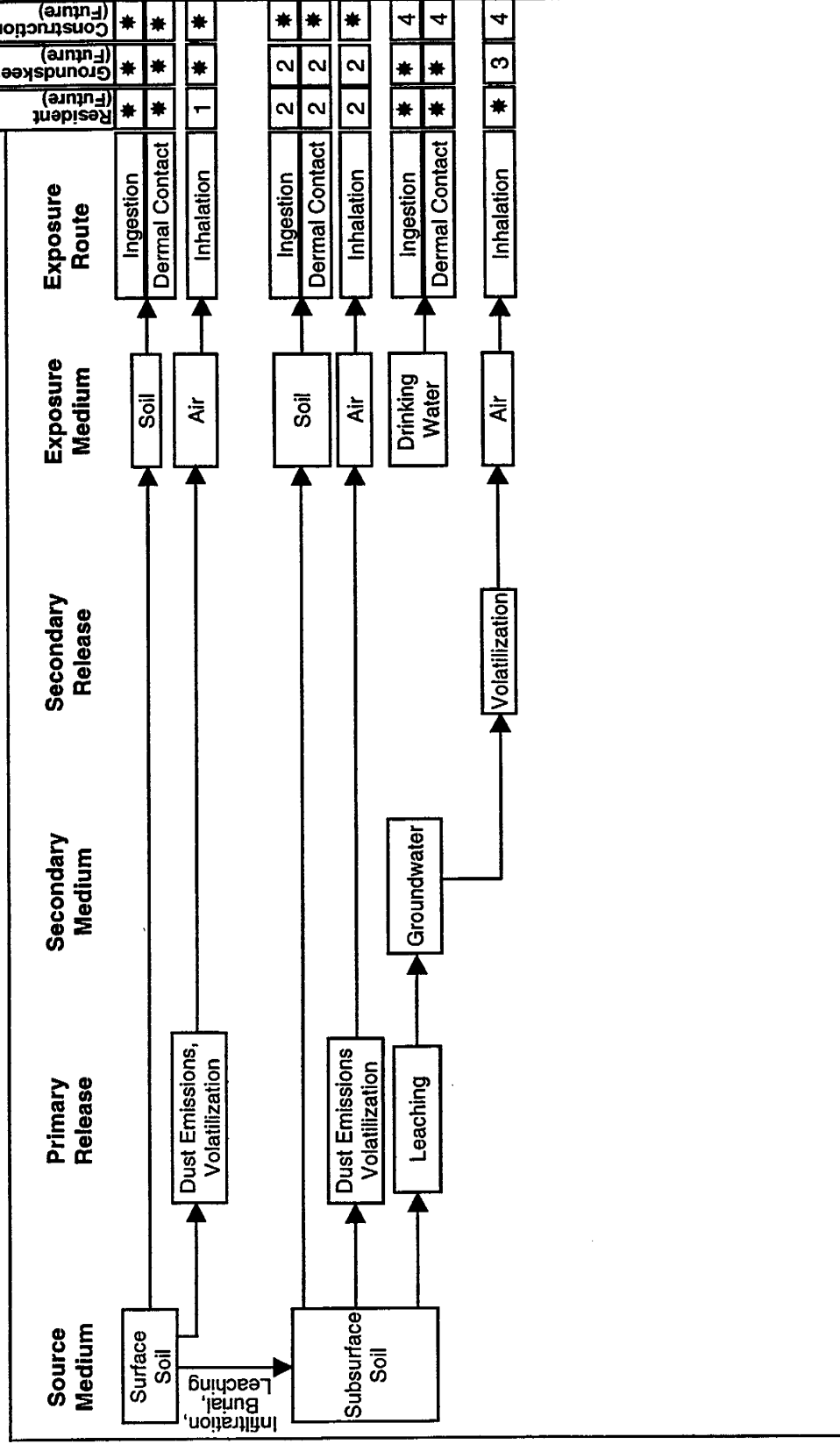
3.4.1 Risk Evaluation

Confirmation of the presence or absence of contamination at the Former Fuel Yard will be based upon a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. This definitive data will confirm the presence or absence of site contamination areas and will support additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, and groundwater will be sampled and analyzed in order to meet the objectives of the site investigation at the Former Fuel Yard. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to

Figure 3-1
Human Health Conceptual Site Exposure Model for Former Fuel Yard, Parcel 131(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for the SI investigation are provided in Section 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling performed during the SI at the Former Fuel Yard will include the collection of surface soil, subsurface soil, and groundwater for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media sampled, location descriptions and rationale are shown in Table 4-1.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from three soil borings at the Former Fuel Yard.

4.2.1.1 Sample Locations and Rationale

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

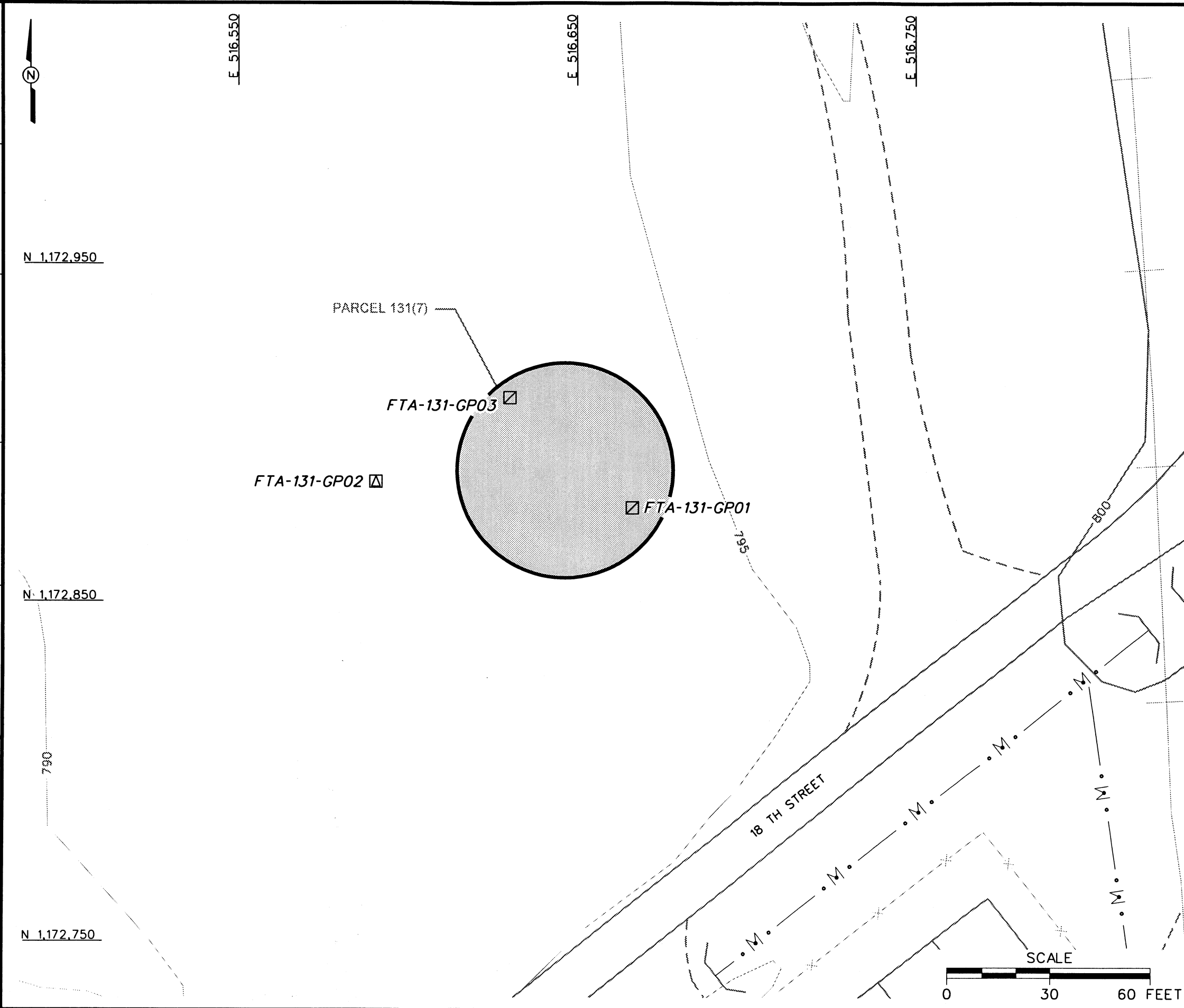
4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened for information only, not to select which sample will be submitted to the laboratory for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

**Sample Locations And Rationale
Former Fuel Yard, Parcel 131(7)
Fort McCiellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
FTA-131-GP01	Surface soil and subsurface soil	Surface soil and subsurface soil will be collected in southeastern section of the parcel to determine if potential site-specific chemicals (PSSC) are present in site media.
FTA-131-GP02	Surface soil, subsurface soil, and groundwater	Surface soil, subsurface soil, and groundwater will be collected southwest of the parcel boundary for downgradient to determine if PSSCs are present in site media.
FTA-131-GP03	Surface soil and subsurface soil	Surface soil and subsurface soil will be collected in northern section of parcel to determine if PSSCs are present.



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - RAILROAD
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLING LOCATIONS
FORMER FUEL YARD
PARCEL 131(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

Table 4-2

Surface and Subsurface Soil Sample Designations, and QA/QC Sample Quantities
Former Fuel Yard, Parcel 131(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-131-GP01	FTA-131-GP01-SS-DK0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-131-GP01-DS-DK0002-REG	a			FTA-131-GP01-DS-DK0002-MS FTA-131-GP01-DS-DK0002-MSD	
FTA-131-GP02	FTA-131-GP02-SS-DK0003-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-131-GP02-DS-DK0004-REG	a	FTA-131-GP02-DS-DK0005-FD	FTA-131-GP02-DS-DK0008-FS		
FTA-131-GP03	FTA-131-GP03-SS-DK0007-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-131-GP03-DS-DK0008-REG	a				

* Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

N/A - Not applicable.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from three soil borings at the Former Fuel Yard.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the same soil borings as described in Section 4.2.1.1. Subsurface soil samples will be collected from the three soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated levels (above background) using the PID, the deepest sample interval collected shall be submitted for laboratory analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight for determining the existence of any PSSCs. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses

required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Direct-Push Groundwater Sampling

One groundwater sample will be collected from a direct-push temporary well installed at the site. The direct-push temporary well will be completed in one of the installed soil borings described in Section 4.2.2 to collect a groundwater sample.

4.2.3.1 Sample Locations and Rationale

One groundwater sample will be collected from a direct-push temporary well completed in a soil boring installed at the site. The groundwater sample will be collected from the location of the direct-push temporary well shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. Groundwater sample designation and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.3.2 Sample Collection

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.9.1.1 and 4.9.1.4 of the SAP. The direct-push temporary well will be completed at the water table surface (at a depth where sufficient water is encountered) to collect a groundwater sample.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as neces-

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Former Fuel Yard, Parcel 131(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-131-GP02	FTA-131-GP02-GW-DK3001-REG	water table ^a	FTA-131-GP02-GW-DK3002-FD	FTA-131-GP02-GW-DK3003-FS	FTA-131-GP02-GW-DK3001-MS FTA-131-GP02-GW-DK3001-MSD	TCL VOCs, TCL SVOCs, TAL Metals

^a Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

N/A - Not applicable.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

sary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at the location specified in this chapter will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Fuel Yard consist of the following analytical suite:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of the SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

The field sampling coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

Table 4-4

Analytical Samples
Former Fuel Yard, Parcel 131(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples*					Quanterra Total No. Analysis	QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)		
Former Fuel Yard: 1 water matrix sample (1 groundwater sample) 6 soil matrix samples (3 surface soil and 3 subsurface soil samples)													
TCL VOCs	8260B	water	normal	1	1	1	1	1	1	1	1	6	1
TCL SVOCs	8270C	water	normal	1	1	1	1	1	1	1	1	5	1
Tot TAL Metals	6010B/7000	water	normal	1	1	1	1	1	1	1	1	5	1
TCL VOCs	8260B	soil	normal	6	1	6	1	1	1	1	1	10	1
TCL SVOCs	8270C	soil	normal	6	1	6	1	1	1	1	1	10	1
TAL Metals	6010B/7000	soil	normal	6	1	6	1	1	1	1	1	10	1
Former Fuel Yard subtotal:				21	6	6	6	6	1	6	6	46	6

*Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Attn: John Reynolds
 Tel: 423-588-6401
 Fax: 423-584-4315

USACE Laboratory split samples
 are shipped to:

USACE South Atlantic Division Laboratory
 Attn: Sample Receiving
 611 South Cobb Drive
 Marietta, Georgia 30060-3112
 Tel: 770-919-5270

CA - Chemical Agent

Cl - Chlorinated.
 MS/MSD - Matrix spike/matrix spike duplicate.
 OP - Organophosphorus.

PCB - Polychlorinated biphenyls.

Pest - Pesticides.
 QA/QC - Quality assurance/quality control.
 SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.
 VOC - Volatile organic compound.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.1 and 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Telephone: (770) 919-5270

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Fuel Yard will include decontamination fluids and possibly disposable personal protective equipment, and will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Health and safety requirements for this site investigation are provided in the SSHP attachment for the Former Fuel Yard, Parcel 131(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science & Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Site Investigations at Fort McClellan, Alabama*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plan*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama (TS-PIC-89334)*, Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.